CRYSTALS

Atari

24K

DYNACOMP

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CRYSTALS*

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CRYSTALS generates an endless variety of colorful symmetrical designs on your Atari computer. The displays are constructed by randomly generating four complex waveforms, thus insuring unique designs each time. The program plots over 6ØØØ points in graphics mode 8 (Hi-rez) per display, to form a symmetrical multi-color design; playing "music" as it goes along.

USEFUL VARIABLES (See Program Code)

RA - Determines the maximum "spin" of the summed sinwaves.

F1-F8 - Individual "spin" characteristics (frequency).

A1X-A2Y - Maximum screen X & Y values (amplitude).

Z1-Z8 - Initialized to to random start point degrees.

X - (Lines 31Ø-34Ø) determines point differential along the individual sinwaves.

ST - (Line 1050) number of points to be plotted between end points E(P) and Q(P).

BASIC ALGORITHM

Determine a point (T1) along the sinwave described as sin((ZN+X)*FN) where ZN is a constant between Ø-36Ø°; X represents a Ø.6° step and FN is the frequency.

Repeat above step generating a "T2".

Multiply T1 and T2 (3UM≤1.Ø); add quadrant separation (in this case Ø.4); normalize to less than or equal to 1 by dividing by (1.4) and multiply by the maximum screen window size; and perform an absolute function to avoid quadrant overlap. NOTE: The multiplication of T1 and T2 generates a complex waveform.

These steps are repeated 4 times, generating 2 X-values and 2 Y-values.

The program then computes a line (standard MX+B) between the two end points; calculates the number of points along this ray (# of points determined by the division constant at Line 1Ø5Ø) and plots symmetrically about the screen center axis.

In Lines 4ØØØ-4Ø9Ø the X & Y values are reversed and plotted as a scroll in each corner of the display.

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* Program Code (C) 1981 by Douglas McFarland, Fairport, NY.

```
1 GOSUB 9000
2 DEG
3 POKE 54018,52
5 RA=12:I=RA/2
20 DIM Q(80),W(80),E(80),R(80)
30 POKE 77,0
143 A1X=150:A2X=150:A1Y=95:A2Y=95
144 F1=RA%RND(1)-I:F2=RA%RND(1)-I
145 F5=RA%RND(1)-I:F6=RA%RND(1)-I
147 F7=RA%RND(1)-I:F8=RA%RND(1)-I
148 F3=RA%RND(1)-I:F4=RA%RND(1)-I
170 GOSUB 300
186 TINT=0
188 GRAPHICS 24
189 LUM=0
190 SETCOLOR 1,TINT,15:SETCOLOR 2,TINT,L
UM
200 SETCOLOR 4,TINT,LUM
205 COLOR 1
206 GOSUB 4000
210 GOSUB 1000
270 GOTO 30
300 REM
304 P=0
305 Z1=INT(361%RND(1)):Z2=INT(361%RND(1)
)
306 Z3=INT(361%RND(1)):Z4=INT(361%RND(1)
)
307 V=361%RND(1)
308 Z5=INT(361%RND(1)):Z6=INT(361%RND(1)
)
309 Z7=INT(361%RND(1)):Z8=INT(361%RND(1)
)
310 FOR X=V TO V+47 STEP 0.6
315 T1=SIN(Z1+X)%F1):T2=SIN(Z5+X)%F5)
320 Q(P)=ABS((A1X%(T1%T2+0.4)/1.4))
321 T1=SIN(Z2+X)%F2):T2=SIN(Z6+X)%F6)
322 W(P)=ABS((A1Y%(T1%T2+0.4)/1.4))
326 T1=SIN(Z3+X)%F3):T2=SIN(Z7+X)%F7)
330 E(P)=ABS((A2X%(T1%T2+0.4)/1.4))
331 T1=SIN(Z4+X)%F4):T2=SIN(Z8+X)%F8)
332 R(P)=ABS((A2Y%(T1%T2+0.4)/1.4))
338 IF P=74 THEN SETCOLOR 1,TINT,LUM:COL
OR 1
340 P=P+1:NEXT X
350 RETURN
1000 REM CALCULATE LINE
1010 K=P-1
1020 FOR P=1 TO K
1030 M=(W(P)-R(P))/(Q(P)-E(P))
1040 B=W(P)-M%Q(P)
1050 ST=(E(P)-Q(P))/20
1065 IF Q(P)=E(P) THEN Q(P)=Q(P)+1:GOTO
1030
1066 FR=INT(155%RND(1))+100
1067 SOUND 0,FR,10,2:SOUND 1,FR+1,10,2
1070 GOSUB 1500
1080 NEXT P
1085 FOR XX=1 TO 400:NEXT XX
1086 SOUND 0,0,0,0:SOUND 1,0,0,0
1090 RETURN
1500 FOR X=Q(P) TO E(P) STEP ST
1510 Y=M%X+B
1520 PLOT 160+X,96+Y
1530 PLOT 160+X,96-Y
1540 PLOT 160-X,96-Y
1550 PLOT 160-X,96+Y
1560 NEXT X
1570 RETURN
4000 N=P
4010 K=P-1
4020 FOR P=1 TO K
4030 PLOT E(P),W(P)
4035 PLOT Q(P),R(P)
4040 PLOT E(P),191-W(P)
4045 PLOT Q(P),191-R(P)
4050 PLOT 319-E(P),191-W(P)
4055 PLOT 319-Q(P),191-R(P)
4060 PLOT 319-E(P),W(P)
4065 PLOT 319-Q(P),R(P)
4070 NEXT P
4080 P=N
4090 RETURN
9000 DIM CR$(1):CR$=CHR$(155)
9010 GRAPHICS 2:OPEN #1,4,0,"K:":POKE 75
2,1
9020 SETCOLOR 0,8,10:SETCOLOR 2,0,0
9030 PRINT #6;CR$;CR$;CR$;CR$;
9050 PRINT #6;"      CRYSTALS"
9060 PRINT #6;""
9070 PRINT #6;"      by dynacomp"
9080 PRINT " Please Wait ........"
9090 POKE 752,0:RETURN
```

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